Amendments to the Specification:

Pursuant to 37 C.F.R. § 1.121(b) kindly amend the specification as follows. Amendments to the specification are made by presenting replacement paragraphs or sections marked up to show changes made relative to the immediate prior version. The changes in any amended paragraph or section are being shown by strikethrough (for deleted matter) or underlined (for added matter).

Please amend the paragraph on page 1, lines 7-9, to the following:

It is known to use a single sensor for measuring the length of a part. U.S. patent 5,430,665 teaches an apparatus and method for measuring the length of a moving elongated object.

Please amend the paragraph on page 1, lines 23-25, to the following:

A method for determining the length of a multiplicity of individual parts is disclosed using at least ~~2~~ two sensors, where the relative distance between the ~~2~~ two sensors is fixed in that the relative distance is not adjusted during the determining step.

Please amend the paragraph on page 2, lines 13-19, to the following:

A method for determining the range of a dimensional parameter of a multiplicity of members is provided. The method includes: providing two sensors, including a first sensor and a second sensor; fixing a constant distance (Δl) between the ~~a~~ first sensor and ~~a~~ the second sensor such that the relative distances between sensors are fixed and free from adjustment; moving the multiplicity of members relative to the two sensors; predetermining a point on each member; recording a first time segment (Δt_1); recording a second time segment (Δt_2); and computing a dimension of the member.

Please amend the paragraph on page 2, line 24, to the following:

Fig. 3A shows an alternative embodiment of the present invention.

Please amend the paragraph on page 2, line 25, to the following:

Fig. ~~3b~~ 3B shows the signals available from the ~~3~~ three-sensor technique.

Please amend the paragraph on page 3, lines 1-2, to the following:

~~Fig.5 shows the prototype installation on a V-track that is automatically fed from a vibrating bowl feeder.~~

Please amend the paragraph on page 3, line 3, to the following:

~~Fig. 6 shows sorting program in operation.~~

Please amend the paragraph on page 3, lines 9-20, to the following:

Referring to Fig. 1, a part measurement system 10 is shown. The purpose of the system is to quickly or efficiently measure a multiplicity of parts which ~~comprises~~ includes desired parts as well as undesirable parts. As shown, a multiplicity of parts 12 and some undesired foreign parts 14 are provided for measurement. The parts 12 and undesired foreign parts may be movably traveling through a channel 16 which forms a physically constricting means for channeling the parts 12 and parts 14 for desired measurement. Note that channel 16 may not be needed in that parts 12 and parts 14 may be free falling from one area to another area and during the free falling period be measured by system 10. Foreign parts 14 are parts inadvertently or undesirably got mixed together with parts 12. This mixing together may include production error of parts. As can be seen, the variations of parts 12 and parts 14 can be very small in the context of the total dimension of parts 12 and parts 14 respectively.

Please amend the paragraph on page 3, line 21- page 4, line 13 to the following:

Foreign parts 14 are parts which need to be first identified and preferably later taken out according to the teachings of the present invention. A plurality of sensors including first sensor 18 and second sensor 20 are stably positioned in relation to the parts including multiplicity of parts 12 and some undesired foreign parts 14, which move in relation to the sensors, i.e. first sensor 18 and second sensor 20. A controller 22 is coupled to the sensors for processing the sensed information. By stably positioned, it means that the distance 28 between the first sensor

18 and the second sensor 20 is a constant at least during the parts measurement process or period. In other words, the distance 28 may be adjustable, but during the parts measurement the distance 28 is fixed or is a constant. This adjustability is desirable in that for a measurement of a different part dimension, it is preferable to adjust or change the distance 28 to correspond to the different part dimension. By way of an example, if a pin length is the thing subject to measurement, distance 28 can be adjusted to be substantially identical to the pin length in order to have a more efficient measurement. However, it needs to be made clear that a key provision of this technique is that the distance 28 is not critical to the function of the system. That is what makes the technique of the present invention different from other methods like the one described in the Background section of the present invention. It needs to be stressed that in the description supra, the positioning of the sensors need only be approximate for this technique to work. In other words, absolute accurate positioning of the distance between the sensors ~~are~~ is not required. Of course, proper positioning can increase the accuracy and repeatability but that is only required for very special situations. In its basic form this technique is independent of the sensor locations relative to each other.

Please amend the paragraph on page 4, line 25- page 5, line 11 to the following:

In most sensor systems, the sensor therein may be directed to sense at only a predetermined direction. In ~~other words~~ an embodiment of the present invention, all the sensors involved do not need to be focused upon point 24. For example, as indicated by the dotted line 18b and 20b described supra respectively, a non-focused system is depicted. It is noted that by "focused", it is meant that the sensors have their respective sensing points as one identical point. In other words, by "focused", it is meant that the sensors sensing directions are focused at a single point. For example, at the instant ~~as~~ shown in Fig.1, the sensor 18 has its sensing rays 18b blocked by a pin 12 such that the receiver 18a cannot received communication coming from the sensor 18. At this juncture, a different signal (or first signal) is fed to the microprocessor 22. ~~when~~ When a sensor can communicate with its receiver such as shown in the figure with regard to sensor 20 in which sensing rays 20b is received by receiver 18a due to the crevice or the junction 26 between two pins (in this example, between two pins 12), a second signal is fed to the microprocessor 22. As such, the system 10 is disposed to know information relating to the length of pin 12 or pin 14, and thereby process~~ing~~ the same according to the teachings of the

present invention. One way to process the information is to record the time periods that have elapsed with regard to the sensors, be they first sensor 18, second sensor 20, or third or fourth sensors (not shown) if required.

Please amend the paragraph on page 6, lines 6-13, to the following:

It is noted that velocity of the moving parts such as the pins may not be a constant. In other words, the velocity may be a variable or function that changes with ~~the passing of~~ time. If this is the case, some adjustments are required. The adjustment includes changing the ratio ($\Delta t_2 / \Delta t_1$). It is noted that high velocity is an important feature ~~taking~~ to be taken into consideration ~~by~~ in the present invention. A working definition of "high" velocity is ~~that the~~ a speed at which the parts subject to measurement pass a sensor (or sensors) which is so fast that ~~effective measurements using~~ previously known means are ~~in sufficient~~ insufficient for effective measurement. For example, at a "low" velocity, ~~one~~ a measurement system may merely use a single sensor for measurement. The sensor may even be the naked eye of humans.

Please amend the paragraph on page 6, lines 16-21, to the following:

Referring to Fig. 3A, an alternative embodiment 10a of the present invention is shown. In addition to the elements shown in Fig. 1, a third sensor 21 is added, which in turn has a sensing ray 21b directed at the pins for sensing variations thereto. A receiver 21a may be provided for receiving ray 21a from sensor 21. Alternatively, sensor 21 may have a ~~built-in~~ built-in receiver (not shown) which performs similar functions as receiver 21a in feeding information back to microcontroller 22.

Please amend the paragraph on page 6, lines 22-26, to the following:

Additionally, a third sensor 21 is provided. Sensor 21 may sense parts via a focused sense line 21a ~~that being~~ which is focused upon a single point on the moving parts 12, 14. As can be appreciated, the single point 24 is also the point being focused upon by sensor 18 and sensor 20. Alternatively, sensor 21 may have a non-focused sensing line 21b.

Please amend the paragraph on page 7, lines 15-17, to the following:

For example, ~~in~~ Fig. ~~3b~~ 3B ~~which~~ shows the signals available from the ~~3~~ three-sensor technique and the additional available (Δt) values are available for alternate calculations.

Please amend the paragraph on page 7, lines 18-27, to the following:

It is noted that ~~in the~~ under ideal conditions, two sensors are theoretically sufficient for the present invention. The distance between the two sensors is preferably set to equal the parts length subject to measurement. However, due to the fixed distance nature of the present invention, parts length subject to measurement cannot always be the same. Further factors involved are the error in measurement inherent in any sensor, the velocity of the movement of the parts subject to measurement, and the length or dimensional difference between the desired parts and the undesired parts, etc. Therefore, more than two sensors may be introduced. ~~thereby~~ Thereby more parameters can be measured and ~~thereby provided~~ more ~~row~~ data can be collected for an improved accuracy in the measurement of the present invention.

Please amend the paragraph on page 7, line 28- page 8, line 7 to the following:

Referring to Fig. 4, a diagrammatic depiction of a pin length selection system is shown. Parts to be tested pass through channel 16. Note that the parts can be desired parts 12 as well as undesired parts 14. The parts, while in channel 16, are sensed by sensor unit 30, which may include first sensor 18, and second sensor 20, or other sensors (not shown). Actuators such as first actuator 32 and second actuator 34 are provided for selectively collecting desired parts 12 in a pass container and parts 14 in a fail container. First actuator 32 and second actuator 34 each respectively receives command from microprocessor 22 and is informationally coupled thereto. The following is an example that evaluates several variations on this concept of the present invention. ~~The hardware involved includes~~

Please amend the paragraph on page 8, lines 8-10, to the following:

~~Fig. 5 shows the prototype installation~~ A prototype of the present invention has been installed on a V-track that is automatically fed from a vibrating bowl feeder. A microcomputer was programmed to interpret the sensor output and calculate the ($\Delta t_2 / \Delta t_1$,) ratio.

Please amend the paragraph on page 8, lines 11-21, to the following:

~~Fig. 6 shows sorting program in operation. At this time testing is ongoing on this technique but initial results indicate that the~~ The method is quite accurate with proper sensor orientation and setup. As discussed supra, the fact that sensor positioning is not critical to the basic function of this system adds flexibility to the design. ~~of~~ Of course better results ~~can~~ may be achieved by modifying the sensor position but it is also found that at high speed, repeatable sensors are better and that proper part presentation can also improve the accuracy and repeatability. By way of an example, repeatability of ±0.0005" has been demonstrated for pin speeds up to 35 inches per second. ~~Additional testing will consider throughput capabilities and long term durability of the system for offline pin sorting in the production environment. Note the graphic window therein for easy user determination.~~